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NEWS LETTER

OF THE

BUREAU OF ENTOMOLOGY

U. S. DEPARTMENT OF AGRICULTURE.

NUMBER 2.

MAY, 1914.

UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF ENTOMOLOGY,
WASHINGTON, D.C.

May 1, 1914.

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(The following pages represent Number 2 of the News-letter of the Bureau of Entomology. Owing to conditions which arose it was not possible to collect data for this number in time to publish it for the month of April.)

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MEMORANDUM CONCERNING PARCEL POST.

By Parcel Post may be forwarded such articles as are permitted under Section 454 of the Postal Regulations, which embraces 4th class mail matter, including farm and factory products not exceeding 50 pounds in weight when mailed for delivery within the first and second zones, nor exceeding 20 pounds in weight when for delivery in any of the other zones, nor greater in size than 72 inches in length and girth combined, nor in form or kind likely to injure the person of any postal employee or damage the mail equipment or other mail matter, and not of a character perishable within a period reasonably required for transportation and delivery.

LIBRARY.

It would greatly convenience the librarian in taking inventory if all field men having in their charge books purchased for field use by the Bureau— dictionaries, atlases etc.— or books loaned to them from the Bureau of the Department library would send in lists next month. Author, title, date, number of the edition and number of the copy should be given.

The librarian requests that members of the Bureau coming in to Washington for a few days only will be sure to return books borrowed from the library before leaving the city. It has happened sometimes that a man has left books belonging to the Library on his desk when about to leave the city; they have been misplaced and delayed in getting back where they belong and annoyance has been caused all along the line.

The librarian would count it a favor if all members of the bureau hereafter would send one copy of each author's separate for filing in the Bureau library. If the article be in a Department publication this is of course unnecessary but separates from other publications would be most acceptable.

New Books.

Bourcart, E. Insecticides, fungicides and weedkillers. Practical manual of the diseases of plants and their remedies. London, Scott, Greenwood & Son, 1913. 450p.

- Escherich, K. Die Forstinsekten der Mitteleuropas. Lehr-u.
Handbuch -Als Neuauflage von Judeich-Nitsche,
Lehrbuch der Mitteleuropaischen Forstinksektenkunde
v.1. 1914.
- Schroder, Chr. Handbuch der Entomologie von dr.C.Borner...prof.
dr. P. Deegener..prof. dr.K. Eckstein...hrsg. von
prof.dr. Chr. Schroder. lfg.1-4. Jena, G.Fischer
1912-1914.
- Houard, C. Les zoothecies de plantes d'Europe. v.3 (supple-
ment 1909-1912) Paris, 1913.
- Patton, W.S. and Cragg, F.W. Textbook of medical entomology.
Christian literature society for India. London,
Madras and Calcutta. 1913. 767p.
- Shelford, V.E. Animal communities in temperate America. (Geo-
graphic society of Chicago. Bul. 5, 1913) 362p.
- Theobald, F.V. Textbook of agricultural zoology. 2d ed. rev.
Edinburgh & London, 1913. 536p.

THE INVENTORY OF NONEXPENDIBLE PROPERTY FOR 1914.

The Bureau of Entomology is required to take an inventory of nonexpendable property once each year. Field agents in charge of stations will render a report to the Washington office for check against the card record which shows each unit's liability or accountability. The annual inventories of property should always be made out by the actual custodian of the property and not by the property clerk in the headquarters office.

The Bureau inventory is audited each year and it is essential that each agent having Bureau property in his charge shall fully account for each item charged to him and he will be held responsible for all losses due to negligence. A full set of blanks and instructions will be sent each field station.

All substances or articles that are used up or rapidly worn out or destroyed in the normal course of the work, such as chemicals of all kinds, photographic supplies, stationery, tinware, glassware and the like, and articles costing less than one dollar, are expendable articles and should not be included either in the annual inventories or in accounting for the transfer, loss or destruction, or purchase of such articles. A list of the nonexpendable articles to be accounted for will be sent each employee charged with such property.

Specific information must be given for each article listed on the inventory or on the invoice of property so that it may be readily identified thereafter. In some prominent place on many articles, stamped, painted, or on a plate, is the trade name of the article, the name of the manufacturer, and the number; all this information should be given on the inventory blank or the invoice of property. For instance, "1 lens" is not a sufficient description. It is a rectilinear or an anastigmat? Full information is usually given on the inside rim of the mounting of lenses and this must be given in the accounting. The asterick (*) before an article on the list is a caution not to include any article under this head, that has already been listed as a part of the equipment of some

other article.

When any employee in the field or at Washington shall desire to transfer nonexpendible property to another employee he must fill out the blank, "Invoice of Property" in triplicate, sign the original, and send all three copies to the employee to whom the property is to be transferred, when the property is received the consignee shall sign both receipts, returning the triplicate to the consignor, sending the duplicate to the Bureau of Entomology and retaining the original for his file.

When any property is lost or destroyed a property invoice must be made out in duplicate using the receipt portions only. Mark the face of the invoice "LOST" or "DESTROYED", as the case may be, sign both copies, write a brief but clear explanation of the occurrence on the backs of the receipts, and forward both copies to the Bureau of Entomology. This same procedure should be followed in cases where nonexpendible property is condemned and sold. Otherwise the agent will be required to account for such articles.

If an employee purchase nonexpendible property in the field on a Letter of Authority, he must list such purchases in duplicate on an invoice of property, using the receipt portions only, clearly describing each article. He will then sign the receipts, attaching both copies to the voucher covering the purchase, and forward in the usual manner to this Bureau. Without this invoice, no voucher covering the purchase of nonexpendible property in the field will be passed for payment.

When an employee is about to sever his connection with the Bureau he must send to this office, an invoice of property, properly receipted by his successor, of all the nonexpendible property charged to him, before his accounts can be passed. If there is not sufficient room on the form "Invoice of Property," the articles may be listed on sheets of letter paper in triplicate and pasted to the invoice.

BEE CULTURE.

E. F. Phillips, in charge.

Dr. E. F. Phillips, who spent the winter in Philadelphia working on the wintering of bees, has returned to Washington. Mr. Geo. S. Demuth will remain in Philadelphia for a few weeks to close up the work of the season. The winter experiments were conducted in a constant temperature room in the new Zoological Laboratory of the University of Pennsylvania.

The work so far done consists chiefly in determining the responses of the bee colony to changes in the external temperature. The effects of various foods have also been studied. A special scale devised and built by A. H. Emery, Glenbrook, Conn., was used to determine the loss of weight of the hive and colony due to the consumption of stores and the death of bees. These scales are capable of weighing to one grain and have a total capacity of 340 pounds. The temperature readings were made by the use of thermo-couples, the instruments being adapted and made by the Leeds and Northrup Company, Philadelphia, Pa. By this method readings are made to $1/20^{\circ}\text{C}$. A preliminary report has been presented.

Dr. N. E. McIndoo prepared a paper on the "The Olfactory Sense of the Honey Bee" which appeared in the April number of The Journal of Experimental Zoology. It is found that the organs of olfaction are small pit-

like structures adjoined over the legs and at the base of the wings. The antennae seemingly have no part in flight, according to the current belief. A popular account of this work will appear in the American Bee Journal.

CEREAL AND FORAGE INSECT INVESTIGATIONS.

F. M. Webster, in charge.

MAY-BEETLES IN 1914.

Studies made by assistants in the cereal and forage crop insect investigations the past few years indicate an unusual abundance of May-beetles, the parents of the destructive white grubs, in the northern United States from South Dakota to Connecticut, this spring. Owing to the fact that there are many different species of May-beetles it is important that the predominant species of different localities be determined, as well as the years of abundance, to enable us to work out, so far as possible, the different broods, as has been done in the case of the periodical cicada or so-called 17-year locust. With this information it may be possible to give advance warnings previous to years of abundance and the ravages of the white grub thereby reduced to a minimum.

Beetles should be most abundant during the month of May but may extend through the month of June. All collections sent should be enclosed in a wooden box, if possible, or if killed in alcohol, shipments may be made in cans or jars. The date of capture, whether collected at lights, behind the plow, or at trees (the beetles feed on the foliage of various trees), place of collection, and name of collector should accompany specimens. The larger the number of beetles sent the more accurate will the data be. Shipments should be made to J. J. Davis, U. S. Entomological Laboratory, Lafayette, Ind.

NOTE ON KEROSENE EMULSION.

A rather good question came up to-day at the Wellington station relative to the amount of water to be added to a given quantity of kerosene-emulsion stock solution to make a given per cent of kerosene; the emulsion being the usual 2/3 kerosene content. In view of the importance of this contact spray it seemed to the writer advisable to submit a sure and simple formula by which to determine the quantity of water to add.

Let x = the amount of stock solution.

The % wanted is always given.

Let Q = the amount of water to add.

($\frac{2}{3}$ of x)

Formula. $(\frac{\%}{\frac{2}{3}x}) - x = Q$

Example: Given 300 gals. stock solution kerosene emulsion.

To find amount of water to add to make a 4% solution.

($\frac{2}{3}$ of 300)

Applying above formula. ($\frac{2}{3} \times 300$) - 300 = Q

(.04)

or, $\frac{2}{3}$ of 300 = 200

(200)

(---) = 5000

(.04)

5000 - 300 = 4700 = Q

conversely, Q = 4700 gals. = quantity of water
to add;

QED.

Proof: 4700 gals. of water + 300 gals. of stock solution = 5000 gals.

4% of 5000 = 300 = the amount of kerosene content.

W. E. Pennington.

E. O. G. KELLY WANTS A NEW INSTRUMENT FOR DIGGING INSECTS.

In cereal and forage insect investigations we find a great number of the insects in the soil, and it has been a source of considerable study to get an instrument suitable for the purpose of doing this sort of digging.

We have tried a number of instruments at the Wellington Laboratory and herein is the list; if any one can add to the list one better suited it will be appreciated. In the first place something light, strong and handy for carrying is required. We have used an automobile spade with detachable handle, a light garden hoe with handle cut down to 18 inches in length, a planters hoe with handle cut short, a hatchet, a "Marpel" a broad blade chisel, a catchers knife, and a putty knife and are ready to confess that we would like a better instrument than any of these.

E. O. G. Kelly.

DECIDUOUS FRUIT INSECT INVESTIGATIONS.

A. L. Quaintance, in charge.

Messrs. H. G. Ingerson and H. K. Plank, graduates of the Pennsylvania State College, have been appointed as Scientific Assistants, their work beginning April 18, 1914.

Mr. E. H. Siegler has left California, where he was assisting in the work for the control of the pear thrips, returning to the station at Benton Harbor, Mich., for the purpose of carrying on experiments with insecticides against orchard insects.

A laboratory has been established at Winchester, Va., for conducting studies in the life history and methods of control of the peach tree borer and orchard plant-lice. Mr. E. B. Blakeslee will be in charge.

of the work, conducted by Mr. C. A. Leach. Mr. Leach will give especial attention to remedies to be employed in the control of the woolly apple aphid.

Mr. W. B. Wood has returned to Washington after a stay of several weeks in California, where he was assisting in the work for the control of the pear thrips.

FOREST INSECT INVESTIGATIONS.

A. D. Hopkins, in charge.

THE PERIODICAL CICADA IN 1914.

In order to further map the distribution of the periodical cicada (Brood V), the following notice has been issued by the Branch of Forest Insects, Bureau of Entomology, through the office of the Assistant Secretary of the Department of Agriculture.

"The periodical Cicada or "seventeen year locust" is due to appear this year in your locality between the 10th of May and the 1st of June. It is important to know when the first examples are seen and heard there, in order to map the distribution of this 1914 brood and to determine the variation in the dates of appearance at different altitudes and latitudes. Therefore, will you kindly hand these cards to persons who get mail from your office direct or by R.F.D., and whom you think will give careful attention to the matter and promptly return the card when all dates are filled in."

PLEASE NOTE IN THE FOLLOWING BLANKS:

- a. The date on which the first "seventeen-year locust was seen.
May.
 - b. The date on which it began to appear in numbers
May.
 - c. The date on which the first one was heard
May. or June.
 - d. The date on which it was heard in numbers
May. or June.

Name of nearest postoffice or town.

Distance and direction from place named. miles south,
north, east, west, southwest, southeast, northwest, northeast?

Approximate altitude above sea.

Your name and address.

PREVENTING SPREAD OF MOTHS.

A. F. Burgess, in charge.

Mr. James W. Chapman, who was granted a Doctor's degree by the Bussey Institution of Harvard University, and who for the past two years has been engaged as entomologist to the Park Department of the City of Boston, has been appointed as Scientific Assistant and will take up experimental work with Mr. R. W. Glaser of this Bureau on the 'wilt' disease affecting the gipsy moth. Mr. Chapman published sometime ago a bulletin on the leopard moth (*Zeuzera pyrina*) and several other insect enemies of shade trees.

Mr. S. S. Crossman, who was formerly engaged as an assistant on the citrus fruit insect investigations in Florida, and has during the past two years been employed in Porto Rico investigating economic insects, as an assistant to the entomologist of the Board of Agriculture, Porto Rico, has been appointed as Scientific Assistant and will carry on investigations on parasites at the Gipsy Moth Laboratory.

Mr. J. N. Summers, who has been conducting parasite investigations at the Gipsy Moth Laboratory for the past three years, will sail for Europe in April and will make observations on the fluctuations in increase of the gipsy moth in German forests, and collect and ship parasites to the Gipsy Moth Laboratory for colonization in this country.

SOUTHERN FIELD CROP INSECT INVESTIGATIONS.

W. D. Hunter, in charge.

W. D. Hunter left on March 23 for a short trip of inspection of the Rocky Mountain spotted-fever tick work in the Bitter Root Valley of Montana.

A. C. Morgan returned to his field station at Clarksville, Tenn., on March 25th. He was preceeded a few days by S. E. Crumb.

R. H. Hutchison left on March 22 for New Orleans where he will conduct further investigations of the treatment of manure piles in the control of the house fly, in cooperation with the Bureaus of Chemistry and Plant Industry.

G. N. Wolcott of the Porto Rican Board of Agriculture was in the city March 27. He will spend the spring months in Illinois collecting *Lachnosterna* parasites for introduction into Porto Rico. He will spend the summer in Europe on leave.

A. H. Jennings will resume his work on pellagra at Spartanburg, S. Car., in connection with the Thompson-McFadden Pellagra Commission about May 1.

B. R. Coad left Washington on April 1 for Arizona where he will remain during the season to study the relations between the Thurteria insects and cotton culture. His address will be Tucson, Ariz.

U. C. Loftin has returned to New Orleans after several months spent at Brownsville, Tex., in the study of sugar-cane insects.

An exhaustive report on the destruction of the immature stages of the house fly in stable manure is about to be published. This is the result of cooperative work with the Bureaus of Chemistry and Plant Industry in which particular attention was paid to the effects of various

pplications on the fertilizing value of the manure. The report will be published as a contribution from the Bureau of Entomology.

Since the promulgation of the quarantine against foreign cotton seed on account of the danger of introduction of *Gelechia gossypiella*, and other pests, it has been found that a small amount of seed comes to this country in baled cotton lint from Egypt. J. L. Webb investigated this matter in New Bedford and Fall River, Massachusetts. It was found that the amount of seed brought in in the way described is small, but one live pink boll worm was discovered. The danger from this source is clear from the fact that considerable quantities of Egyptian cotton are shipped to the southern mills which, in many cases, are adjacent to cotton fields.

J. L. Webb will leave Washington at the end of the month to conduct experiments with the tobacco bud worm at Quincy, Florida.

A report on two seasons' work in connection with insects as possible agents in the transmission of pellagra by Mr. A. H. Jennings will be published in "Parasitology", a new journal about to be started under the editorship of Dr. H. B. Ward of the University of Illinois.

TROPICAL AND SUBTROPICAL FRUIT INSECT INVESTIGATIONS.

C. L. Marlatt, in charge.

Mr. Marlatt has recently returned from a ten days' trip through Florida partly for purposes of consultation over white-fly work being conducted by Mr. W. W. Yothers at the headquarters at Orlando. Particular investigation was also made of the citrus region in the central part of the State, including Orlando, and of the peninsular district, including St. Petersburg and the grapefruit and other subtropical cultures in the Miami region. Brief examination was made also of the lime cultures on the Florida keys.

Mr. R. S. Woglum has returned to Whittier, Cal., to continue his work with hydrocyanic-acid gas and the special citrus insects of that region. Mr. Arthur D. Borden, a graduate of Leland Stanford Junior University, and highly recommended by Professor Kellogg, has been employed and assigned to Mr. Woglum as a field assistant.

Mr. J. R. Horton, who has for the last year been working in the citrus groves south of New Orleans, more particularly on the subject of the Argentine ant, has submitted a very thoroughgoing outline for the work of this year. The work already done by Mr. Horton gives great promise of a thoroughly practical outcome of this piece of research.

Mr. J. D. Neuls is elaborating the life history and means of control of the two important scale insects affecting the date palm, namely, *Parlatoria blanchardi* and *Phoenicococcus marlatti*. Mr. A. J. Shamblin, a very expert date scale inspector and an experienced scale exterminator by the new torch method, will be temporarily assigned to Mecca to work in cooperation with Mr. Neuls and Mr. Drummond, the Plant Bureau agent in charge of date work. Mr. Shamblin is under commission from the Federal Horticultural Board in connection with the date quarantine.

Dr. E. A. Back has returned to Honolulu, where he will continue his lepidopterological and control studies of the Mediterranean fruit fly, assisted by Mr. C. E. Pemberton. A joint paper prepared by these agents will shortly be available on the special subject of the relation of all varie-

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ties of citrus fruits to the oviposition and development of this insect. This will be followed by a paper in regard to the general life history of the fly. These two preliminary papers will antedate the full report on the Mediterranean fruit fly which will ultimately be available.

A very interesting paper on the papaya fruit fly has been handed in for publication in the Department Journal under the authorship of Mr. Frederick Knab and Mr. W. W. Yothers.

Mr. Yothers, the agent in charge of the white-fly work at Orlando, Fla., has recently made a laboratory shift. His new quarters are in a small one story dwelling surrounded by ample grounds containing an orchard and some 90 orange trees, many of which are of good size, affording facilities for local experimental work.

Mr. E. R. Sasscer is the entomological inspector for the Federal Horticultural Board, but cooperates with the Office of Tropical and Sub-tropical Fruit Insect Investigations in his scale insect studies and the Bureau inspection work. A great many interesting interceptions are constantly being made of injurious insect pests. One of the most important recent interceptions is the pink soil worm, found abundantly infesting several lots of cotton seed from Egypt.

TRUCK CROP AND STORED PRODUCT INSECT INVESTIGATIONS.

F. H. Chittenden, in charge.

Mr. Fred A. Johnston, Entomological Assistant, who has been in Washington, D.C., for consultation and bibliographic and scientific work, has returned to Riverhead, Long Island where he is engaged in investigation of insects affecting potato, cauliflower, asparagus and other truck crops.

Mr. Wm. H. White, B. S., Maryland Agriculture College has been appointed Scientific Assistant, and assigned to work on truck crop insects in Maryland.

Mr. John E. Graf, Scientific Assistant, who has been in Washington during portions of January, February and March for consultation and study, has returned to his permanent quarters at Whittier, Cal., to resume work on the sugar-beet wireworm, potato-tuber moth and other insects affecting vegetable and truck crops.

Mr. Thomas H. Jones, Collaborator, stationed in Rio Piedras, Porto Rico, has been visiting Washington for study and perusal of literature, and the identification of specimens.

Mr. H. O. Marsh, Scientific Assistant, after an absence of a few months during which he took a special course at the Kansas Agricultural College, Manhattan, Kans., has returned to his headquarters at Rocky Ford, Colo., where he will continue investigations on insects affecting sugar beets and truck crops.

A CONVENIENT CAMERA STAND.

Because of the difficulty experienced in using the ordinary tripod for certain photographic work, a machine which can be adjusted to most any position and with which photomicrographs can be taken was constructed at the Sacramento Station. This machine has proved very satisfactory and believing that other workers might find it useful the following description is furnished:

The machine except where otherwise specified is made of one-inch soft pine, surfaced both sides.

Base $11\frac{1}{2}$ X 22 inches. It is composed of a board fastened with screws to two pieces of 2 X 4 set flush with the sides. Two uprights $6\frac{1}{2}$ X $7\frac{3}{4}$ inches with upper ends rounded are notched into opposite sides of the base and firmly fastened with three screws each. A $\frac{1}{4}$ inch hole is bored in the center and three inches down from the top of each upright. Through these holes the rod $\frac{1}{4}$ X 12 inches long on which the table swings is run.

A board $49\frac{1}{2}$ X $9\frac{7}{8}$ inches is used for the table. This just fits between the two uprights. It is fastened with screws to two 2 X 4 X 3 inch blocks, through the center of which the above mentioned $\frac{1}{4}$ inch rod passes. The blocks are fastened at such a point that the lower end of the table will swing clear of the base. A wing nut on the rod is used to bind the uprights against the two blocks and sides of the table. The table can thus be set at any desired angle.

The camera is attached by a tripod screw to the upper end of the table. An object stand is constructed which is bolted on at the desired places. Use bolts with wing nuts. The points of attaching the stand are determining by focusing the camera and adjusting the position of the stand until the object appears one-half natural size or larger. Holes for the bolts are bored in the table and labeled.

A very satisfactory stand is made of a piece of plate glass set in a frame which is braced by angle pieces on a board which in turn bolts to the table. The glass removes shadows and the background may be made as desired.

For photomicrographs a stand just large enough for the microscope is bolted at the desired point. In adjusting this for use with the camera lens the bellows should not be much extended, the table should be in a vertical position and a cork made to fit into the end of the lens frame and over the ocular of the microscope. This excludes the outside light, allowing the light from the microscope to pass through a hole bored in the center of the cork and protects the lens of the camera from possible injury.

This machine could easily be modified so that the object stands would slide up and down. It was made during odd times and the material only cost \$3.00.

W. B. PARKER.

HINTS IN REGARD TO MAILING LIVING INSECTS.

Field agents and other employees in the field as well as special correspondents frequently send specimens of insects to the Department imperfectly packed so that the insects escape in the mails and nothing reaches the Bureau but a crushed box or a box showing a hole through which the insects escaped. Paper boxes should never be used for sending living specimens unless inclosed in a stouter wooden box. Tin boxes are useful only for short trips from nearby points. When specimens are sent long distances, as for example, from southern Texas, Florida or the Pacific Coast, tin boxes should be discarded and old cigar boxes used from which the inner wrapping, which frequently smells strongly of tobacco, should be removed. Excelsior or moss, preferably the former, should be used in packing and a minimum amount of food should be placed in the box for the journey. We sometimes receive cutworms and other caterpillars, grubs and maggots in first-class shape when packed in this manner from long distances. There is no harm whatever in making holes in the box, as is frequently done by casual correspondents. They think it necessary for the insects to breathe. This is not so, but the holes do afford a certain amount of ventilation which prevents the food from becoming putrid and thus causing the death of the insects themselves. Packages should always be sent so that they will not be left over in the local office, the city post office of Washington or in the postoffice connected with the Department of Agriculture. In other words, the sending should be so timed that the contingency cited, which almost invariably results in the loss of valuable specimens, should be avoided. For example, if samples are sent from California in the middle of the week they will come direct through the mails and reach their destination at Washington without being held over in superheated rooms both in summer and winter.

Each package as well as accompanying letters should be plainly marked with the name and address of the sender, and some statement in regard to the contents of the package should be placed just inside where it will attract attention, and reference should always be made in a separate letter of transmittal. This precaution is necessary because of the large amount of mail which arrives some days, especially in the summer months.

As much as 20-pound packages may be sent under frank without postage, but where possible it is best to keep within the limits of four or five pounds. Specimens of insect-work, such as affected leaves, stems and other parts of the plant, should always be sent separate (not with the insects), and in many cases it is desirable to dry the plants by arranging them between drying papers or large blotters under heavy pressure.

